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10/790,019	03/02/2004	Tatsuya Yasunaga	249210US0	3568
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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
			EXAMINER FISCHER, JUSTIN R	
			ART UNIT 1733	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/790,019  
Filing Date: March 02, 2004  
Appellant(s): YASUNAGA ET AL.

**MAILED**  
**JUL 20 2007**  
**GROUP 1700**

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Harris Pitlick  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed April 4, 2007 appealing from the Office action mailed September 11, 2006.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

4,974,654	HEISHI	12-1990
4,446,198	SHEMENSKI	05-1984

JP 2002096403

TAKAYAMA

04-2002

Rubber Technology and Manufacture (RTM) July 1975.

### **(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takayama and further in view of Heishi, Shemenski, and Rubber Technology and Manufacture (RTM).

Takayama is directed to a method of forming a composite material or tire, wherein a green tire is preheated prior to vulcanization (Paragraph 18). In this instance, the reference specifically states that "metal wires" included inside the unvulcanized tire (Paragraphs 14 and 18) are pre-heated to a temperature between 80 and 120 degrees Celsius, which is identical to that of the claimed invention. While the reference fails to expressly teach that the metal wires are brass plated, it is extremely well known and conventional in the tire industry to brass plate metal wires in the tire industry- such a plating is well recognized as improving adhesion between a metal wire and the surrounding rubber. Heishi (Column 1, Lines 14-27), Shemenski (Column 1, Lines 5-26), and RTM (Page 296 and 400) evidence the well known and conventional use of brass plating with metal wires in the tire industry. It is emphasized that RTM recognizes the known use of brass plating dating back to the middle of the 19<sup>th</sup> century and more importantly, recognizes the modern day use of brass plating in specialized industries,

particularly tires. Given these teachings, one of ordinary skill in the art at the time of the invention would have found it obvious to brass plate the metal wires of Takayama.

Thus, the method of Takayama would involve pre-heating a tire assembly having brass-coated, metal wires at a temperature between 80 and 120 degrees Celsius- this method would result in the claimed needle-like reaction products as they are formed as a direct result of the above noted method.

Furthermore, with respect to claims 1, 5, 6, and 10, the claimed amounts of needle-like projections are directly related to the pre-heating temperature and the duration of pre-heating. As detailed above, the pre-heating temperature of Takayama is identical to that of the claimed invention. In regards to the duration of pre-heating, one of ordinary skill in the art at the time of the invention would have found it obvious to pre-heat the unvulcanized tire of Takayama for a time between 2 and 20 minutes, and thus form between 1 and 50 needle-like projections, in view of standard vulcanization times and the goal of Takayama. As detailed in the previous communications, standard tire vulcanization times are on the order of 30 minutes- the goal of Takayama is to include a pre-heating step in order to prevent the offset of the carcass structure and ultimately reduce the overall curing time by 10 to 20% (Paragraph 21). In light of this goal, the vulcanization time would be between 24 and 27 minutes. One of ordinary skill in the art at the time of the invention would have expected the inventive pre-heating step of Takayama to last for a duration less than the above noted vulcanization times as such a step is included to reduce the overall curing time. Additionally, as noted above, the metal wires of Takayama are preheated so as to reach a temperature between 80 and

120 degrees Celsius- it is evident that a minimum amount of time would have to elapse in order for the above noted temperature to be reached. Thus, one of ordinary skill in the art at the time of the invention would have found it obvious to pre-heat the tire of Takayama in accordance to the claimed invention. It is emphasized that the claimed ranges (number of needle-like projections) define pre-heating times that are consistent with the method of Takayama.

As to claim 7, the preheating temperature of Takayama can be as high as 100 degrees Celsius, which is directly in the middle of the claimed range.

Regarding claims 8 and 9, the disclosed brass makeup is consistent with that commonly used in the tire industry, as shown for example by Shemenski (Abstract).

#### **(10) Response to Argument**

Applicant initially argues that the metal wire of Takayama is included as a means which receives electromagnetic induction so as to heat the wire to a temperature between 80 and 120 degrees Celsius and there is no disclosure in Takayama that one effect of the preheating is to increase the adhesion between the metal wire and the rubber of the tire. It is agreed that Takayama fails to expressly identify a benefit of improved adhesion. However, it is not required for Takayama to identify applicant's benefits- the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). It is emphasized that the entire

inventive concept of Takayama is the inclusion of a pre-heating step in a tire manufacturing process at a temperature that is identical to that of the claimed invention.

Applicant further states that while the use of brass plating is known in the tire industry, there would have been no reason to brass plate said wires unless the purpose of the wire in Takayama is for reinforcing the tire (Page 9 of Appeal Brief). However, the relevant wires of Takayama are in fact tire reinforcing wires (Paragraphs 14 and 18). Takayama specifically states that the metal wire inside the unvulcanized tire is heated to a temperature between 80 and 120 degrees Celsius. There is no disclosure of including a separate, non-reinforcing wire in the tire construction of Takayama. One of ordinary skill in the art at the time of the invention would have recognized the language of Takayama as describing the fundamental reinforcing wires/cords of tires. Thus, it would have been obvious to brass-plate said wires, as is conventional in the tire industry, in order to provide improved adhesion between the cords and the rubber- such a method would necessarily result in the formation of needle-like projections. Furthermore, applicant notes that the wire of Takayama acts as a conductor- the above noted modification does not retard the function of the metal wires since brass is an extremely good conductor of heat.

Applicant further contends that the pre-heating temperature is a necessary, but not sufficient, condition and that the duration of pre-heating also affects the amount of needle-like projections formed. It is agreed that both of the above noted parameters affect the characteristics at the brass/rubber interface. As noted above, the metal reinforcing wires are pre-heated to a temperature between 80 and 120 degrees Celsius,

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which is identical to the claimed pre-heating temperature. With respect to the duration of pre-heating, one of ordinary skill in the art at the time of the invention would have found it obvious to pre-heat the unvulcanized tire of Takayama for a time between 2 and 20 minutes, and thus form between 1 and 50 needle-like projections, in view of standard vulcanization times and the goal of Takayama. As detailed in the previous communications, standard tire vulcanization times are on the order of 30 minutes- the goal of Takayama is to include a pre-heating step in order to prevent the offset of the carcass structure and ultimately reduce the overall curing time by 10 to 20% (Paragraph 21). In light of this goal, the vulcanization time would be between 24 and 27 minutes. One of ordinary skill in the art at the time of the invention would have expected the inventive pre-heating step of Takayama to last for a duration less than the above noted vulcanization times as such a step is included to reduce the overall curing time. Additionally, as noted above, the metal wires of Takayama are preheated so as to reach a temperature between 80 and 120 degrees Celsius- it is evident that a minimum amount of time would have to elapse in order for the above noted temperature to be reached. In this instance, applicant's claimed range between approximately 2 and 20 minutes (1-50 projections) appears to be consistent with the method of Takayama. Thus, one of ordinary skill in the art at the time of the invention would have found it obvious to pre-heat the tire of Takayama in accordance to the claimed invention.

Lastly, it is noted that the claims as currently drafted require the presence of between 1 and 50 needle-like projections due to a pre-heating step at a temperature of 80-120 degrees Celsius. Table 1 of the original disclosure identifies a single example in



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which the claims are satisfied between approximately 3 minutes and 19 minutes. It is noted that this example includes a pre-heating step at 100 degrees Celsius. However, if pre-heating occurred at higher temperatures in accordance to the claimed invention (e.g. 120 degrees Celsius), one of ordinary skill in the art at the time of the invention would have expected the needle-like projections to form more quickly. In such instances, it appears that needle-like projections would necessarily form in methods using high pre-heating temperatures, it being noted that the metal reinforcing wires of Takayama can be pre-heated up to 120 degrees Celsius in an analogous manner to the claimed invention. Thus, at a minimum, the method of Takayama, in view of Heishi, Shemenski, and RTM, is directed to a tire construction in which the brass-plated, metal wires are pre-heated to a temperature of 120 degrees Celsius- one of ordinary skill in the art at the time of the invention would have expected needle-like projections to necessarily form in such a method in view of applicant's experiments.

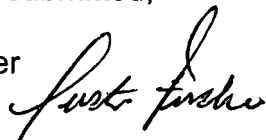
**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

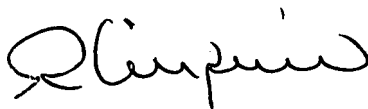
Justin Fischer



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Conferees:

Richard Crispino

A handwritten signature in cursive script, appearing to read "R. Crispino".

Chris Fiorilla

A handwritten signature in cursive script, appearing to read "C. Fiorilla".